

## Reply to Barcellos et al.

**To the Editor**—Barcellos et al. [1] have raised questions regarding clinical variables that might affect the transmission rate of human T lymphotropic virus (HTLV) type I. Although they were not a main focus of our article [2], we have collected and evaluated many of these variables, including the occurrence of mastitis in mothers, the frequency and duration of breast- and bottle-feeding, birth weight, and the frequency of diarrhea in infants.

We have previously described the association of HTLV-I proviral load in peripheral blood and the risk of vertical HTLV-I transmission [3]. All children in our study were breast-fed for a duration of 1–44 months (median, 14 months). Most infants were both breast- and bottle-fed at some time during the follow-up period. Solid foods were introduced at age 3–4 months and progressively became a larger share of the infants' diets. The average frequency of breast-feeding per day was not associated with risk of HTLV-I transmission in the infants in our study ( $P = .93$ ). Similarly, neither birth weight ( $P = .74$ ) nor the cumulative number of episodes of diarrhea reported ( $P = .27$ ) was associated with HTLV-I infection.

We did not have information about the amount of milk consumed by each infant, which would have varied between and within individuals over time. Yet the amount of milk ingested is the largest contributor to the level of virus exposure and, thus, to the risk of transmission. With respect to overt mastitis, only 4 mothers ever reported its occurrence. However, overt mastitis usually results in a discontinuation of breast-feeding from the affected breast. After a steady flow of breast milk is established, there continues to be a range of cells in the milk, as was seen in our samples. Higher cell counts could suggest subclinical mastitis, but we do not know whether these were ductal epithelial cells or inflammatory neutrophils or lymphocytes. Only lymphocytes are likely to be infected with HTLV-I. In African studies of HIV transmission via breast milk, a

positive correlation between higher numbers of cells in breast milk and HIV RNA level was found [4], a finding that might also be true for HTLV-I.

There is little doubt that most infections occur via breast milk. Without intervention, at least 20% of infants breast-fed regularly by HTLV-I-infected women become infected, but infants who are not breast-fed have little risk of infection (3%) [5]. Furthermore, the cumulative risk of transmission increases directly with the duration of breast-feeding and stops when breast-feeding ends. The proviral load concentration in breast milk appears to correlate with that in peripheral blood mononuclear cells, and that level is fairly stable over a long period in chronic HTLV-I carriers [6]. Whether the level also is stable in breast milk has not been studied. Sequential measures are likely to be less informative than a better knowledge of the amount of milk ingested. We have speculated that other factors, such as host genetics, might also play a role in infection risk [7].

Importantly, Barcellos et al. [1] raise the overriding issue of advising HTLV-I-infected mothers about breast-feeding. In a previous study, we reported that these infants of infected mothers became infected with HTLV-I at an average age of 14 months (range, 4–27 months) [3]. The risk in infants who were breast-fed for  $\leq 6$  months was low. At present, in Jamaica, avoidance of breast-feeding is not routinely recommended to HTLV-I-infected mothers, because this approach is practical only if there are adequate alternatives for feeding the infant. When infant care providers know that they have an HTLV-I-infected woman whose babies must depend on breast-feeding, they encourage her to limit breast-feeding to  $< 6$  months, if possible, and to introduce weaning foods early, so that the dependence on breast milk can be minimized. In much of the developing world, the benefits of breast-feeding will outweigh the risk of HTLV-I infection and the rare occurrence of related diseases. This strategy clearly contrasts with a stronger recommendation for HIV-in-

fecting mothers to abstain from breast-feeding. Advice about breast-feeding in HTLV-I-infected mothers should be based on the specific situation and should consider all clinical and social circumstances of the family.

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